

[METHOD OF MANUFACTURING NMOS TRANSISTOR WITH P-TYPE GATE]

Abstract

A method of manufacturing an N-channel metal-oxide-semiconductor (NMOS) transistor with a P-type gate is provided. A substrate is provided and then a gate dielectric layer is formed over the substrate. An indium doped polysilicon layer is formed over the gate dielectric layer in an in-situ deposition process. The indium doped polysilicon layer and the gate dielectric layer are patterned to form a gate structure. An N-doped source/drain region is formed in the substrate beside the gate structure to form the P-type gate NMOS transistor. Since the indium doped polysilicon layer is formed in an in-situ deposition process instead of boron implantation, lattice defects in the gate are minimized the problem of penetration for boron ions is solved.